

Wisconsin Entomological Society

Newsletter

Volume 29, Number 3

November 2002

Insect life is winding down for another season. When I compare it to last year it almost seems we lived in a different state. After the mild winter I told anyone who asked, that I was going to approach the year as if I lived in Missouri. The mild winter did set us up for a potentially odd year—and then May came. All I can say is the insects didn't like it either. Last year was a fantastic butterfly year; for 2002 they didn't get started until July. The Monarchs were late and I did not see near the diversity. But May did not make the whole year. When the southern part of the state became invaded with the Bean Leaf Beetles (*Chrysomelidae-Ceratomia trifurcata*), we had a high number of Cicada Killers and both adults and larvae of the Imperial Moth were reported numerous times. I think of all of these as more southern critters. I heard an odd Cicada one



2002 in Review

by Phil Pellitteri



night that turned out to be *Tibicen pruinosus*. We do not have any specimens from Wisconsin in our collection but it is found in Iowa, Nebraska and Indiana. Michigan has a great website that has the songs of all the cicadas that you can use for identification:
http://insects.ummz.lsa.umich.edu/fauna/Michigan_Cicadas/Michigan/Index.html

German Yellowjacket numbers are way down. This made eating outside in the fall much easier. The spring weather slowed down the Forest Tent Caterpillars, but the number of "friendly flies," the sarcophagid parasite of tent caterpillars, were high enough that people were complaining big time in the northern part of the state. This is the insect that naturally controls the tent caterpillars. Earwigs were there but in smaller numbers than a normal year. Soybean Aphid numbers were down (good news for the farmers). This may result in a decrease in Asian Lady Beetle numbers this fall.

I had lots of questions and samples of larvae of the Pandorus Sphinx (*Eumorpha pandorus*) and Hummingbird Clearwing (*Hemaris thysbe*) adults. It was a good year for millipedes. I saw a lot of Polydesmida Millipedes. These critters are flatter and wider than the normal round Common Millipedes (Julids) and if you did not look close

at the two legs per segment you might think they were a centipede. There have been 26 species of millipedes recorded in the state. The biggest are the 4 in. long *Narceus* which has red legs and is as big around as your little finger. Usually you see small numbers but I even had a complaint of dozens crawling around the inside of a building. Many millipedes live 2-3 years and the high numbers always have an organic matter source. Old fields, pastures, and wooded areas with decaying leaves are all "breeding" grounds. We usually see lots of activity in the fall when they go through a wandering phase, but this year they were moving by early July. Japanese Beetles continue to spread and wreak havoc in peoples' yards. We are finding as many as 50 grubs/sq. ft. in turf. The dry weather in the southern part of the state will slow them down in home yards, but they will do fine in watered lawns.

Now that the weather has turned cooler, fungus beetles are flying into homes and the orb web spiders like *Araneus* and *Argiope* Garden Spiders are out in force. It was a good year for Jumping Spiders. With spiders, anything that is big or colorful must be poisonous—right? This may be an artifact of too much TV watching. It is a bit early to announce the insect of the year for 2002. I will have to wait until the third hard freeze. ☺

Phil is the District Outreach Specialist at the College of Agriculture & Life Sciences, Dept. of Entomology, UW-Madison. He is often heard answering insect questions on the radio.

In This Issue...

Annual Meeting/Bug Bytes
Page 2

Winter Moths
Page 3

The Great Spider Bite
Page 4

Glowworms & Fireflies
Page 5

**The Pest You Should
Learn to Love**
Page 6

The Wisconsin Entomological Society Newsletter is published three times a year, at irregular intervals. It is provided to encourage and facilitate the exchange of information by the membership, and to keep the members informed of the activities of the organization. Members are strongly encouraged to contribute items for inclusion in the newsletter. Please send all news items, notes, new or interesting insect records, season summaries, and research requests to the editor:

Janice Stiefel, 2125 Grove Road, Bailey's Harbor, WI 54202, (920) 839-9796, e-mail: jstiefel@itol.com

NOTE: Please report any address changes to Les Ferge, 7119 Hubbard Ave., Middleton, WI 53562. e-mail: ferge@chorus.net

BUG BYTES...

Backyard and field observations, plus information of interest.

*From Kathy Presnell
Fish Creek, Wisconsin*

My 8-year-old son, Ezra, and I reared Monarchs this July and August as part of our summer home school project. In early August we applied Frontline to our dog to keep away fleas and ticks.

Shortly after this application, emerging butterflies began to die, even though the caterpillars had been very healthy. It happened after we had carefully handled them to tag their wings for Monarch Watch, which tracks the insects on their journey to Mexico. The butterflies would be fine when tagged, act "drunk" in an hour and be dead soon after. Needless to say, my son was devastated and I was heartbroken. We took the whole lot of caterpillars, 30 or so, to our friend Janice Stiefel's home, where she reared them without any further problem. She was kind enough to take over our tagging process, too.

I suspect that chemical residue from Frontline was responsible for this mortality.

Web sites: www.cropinfo.net/AnnualReports/1995/onion.htm and www.beyondpesticides.org/inforServices/pesticidefactsheets/toxic/fipronil.htm and www.ace.orst.edu/info/npic/factsheet/fipronil.pdf

Excerpts from an article in *The Ohio Lepidopterist* regarding Gypsy Moth control.

Hocking County, OH "...Ecologist Dave Horn stated that wide-area Gypsy Moth suppression has not been effective in the past in the east (from experience in Massachusetts in the 1950s and New York in the 1960s). He recognized that there would be disruption in the forest ecosystem from use of *Bacillus thuringiensis*, but that Gypsy Moth defoliation would also have an impact, varying upon the level of defoliation. As a landowner, Dave sympathized with the plight of persons who might see their property devalued if trees were 100% defoliated and millions of large hairy caterpillars were crawling all over creation. He advocated a "wait-and-see" approach, suggesting that individual landowners take steps (including spraying if necessary) to protect foliage in the event of defoliation. But

particularly since I looked into the killing agent (fipronil) on the Internet and discovered that it is used as a food crop pesticide in Australia for a kind of butterfly larvae pest. Frontline has been designed to infiltrate fipronil into the oil glands of mammals to protect them for a month or so from parasitic infestation (a maximum of 120 days). Just like it says on TV, the chemical turns your dog into an instant insect killing machine. Apparently the same is true for humans and, perhaps inadvertently, it works on 8-year-old boys and 45-year-old women as well—for we also were flea free.

Seriously, I am uneasy when I think of any possible unacknowledged effect of the pesticide on kids, pregnant moms and their unborn babies (or anyone with some kind of sensitivity). I realize that I am not a scientist and this is only a theory. However, I could find no other reason in our home for this intense and instant mortality. Please encourage those who care about the fate of the Monarch, to resist the use of Frontline or any other chemical pesticide around the butterflies when rearing and tagging them—regardless of how "harmless" the product has been marketed. ☺

that large scale spraying is not an effective policy.

Will there be area-wide defoliation due to the Gypsy Moth in Hocking County? Probably, especially on ridge tops dominated by oaks (the Gypsy Moth's favorite leaf). However, an Ohio Extension Agent said that Ohio's forests are already losing oaks due to decades of fire suppression. Will the trees be killed? A few will be, if defoliation is complete and occurs two to three years in a row. Will there be significant impacts on tourism or the forest products industry in Hocking Hill? There will be some negative impact if and when defoliation occurs, but the forest is resilient, as is tourism. The Gypsy Moth has been munching foliage in New England since 1869 and the forests there are alive and well, and so is tourism..." ☺ Used with Permission

WES Annual Meeting and Photo Salon

November 16, 2002

Wisconsin Entomological Society's Annual Meeting will be held on Saturday, November 16th at Russell Labs in Madison (map and directions appear on page 8). The meeting is scheduled to begin at 1:00 P.M.

Insect activity of this past summer will be discussed. With questions encouraged. President, Kerry Katovich will give an update on the status of the WES website on which he is working. Nadine Kriska will give a report on her Masters Degree project on *Scarab Beetles of Wisconsin*, which is completed and ready to be published. The meeting will include the Annual Photo Salon. Members having slides of entomological subjects are encouraged to participate in this popular event. Each entrant may submit up to five slides, labeled with the subject and name of the photographer. The slides will be evaluated by the audience, which will vote to select the winning entries. A print of the first place slide is awarded to the winner and is also added to the display in the Entomology Department office. The photographer's name is added to the William E. Sieker Memorial Plaque.

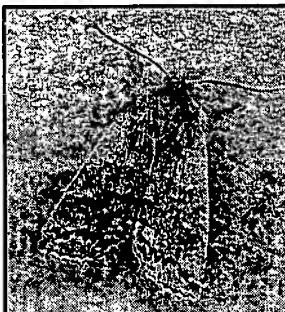
On the agenda is the election of officers for 2003. Nominations are welcome and can be made at the meeting. ☺

One hot, sunny day late in August, while prowling the dunes with my camera, I found the *Liatris* flowers seething with activity. Bumblebees and Sulphur Butterflies worked over the stalks; a few Monarchs, a Black Swallowtail, a Tiger Swallowtail, and a Fritillary clung and probed, turning like pinwheels. As I got closer, I observed big-eyed pale moths fluttering amongst the petals and stamens. The sun was blazing, and here was a bunch of moths! They allowed me to get within inches with the camera, but as soon as the shutter snapped, they were gone. They were sound-activated moths.

It later turned out these were Corn Earworm Moths, a type of Noctuid. They reminded me of another moth revelation. That started March 15, 2001, when the temperatures were still in the 20s and 30s. During the night, furry gray or rusty moths invaded the maple sap pails and spiles. It was winter, and here was a bunch of moths!

As the sap season went on, I observed that these moths dropped like the dead with temperatures below 32°F, and became active again in warmth. I began to find them all over in leaf litter exposed by melting snow. I deduced that they had been there all winter, and the

sun's heat on dark, dead leaves had probably revived them. Eventually the moths were identified as Straight-Toothed Sallows and Morrison's Sallows—both Noctuids. This got me thinking on a few things.



Straight-Toothed Sallow
(*Eupsilia vinulenta*)
Photo: Janice Stiefel. 3/12/96.
Sheboygan Co.

1. WOW—nature contains so much exciting diversity, it's too bad we blind ourselves to it with generalizations about "how things are." Marguerite Holloway's quote sums it up:

"We have a lot of hubris about nature, and when we find things we don't expect, it shows us that nature is more complicated than we ever guessed, and that there must be a lot more to find..."

Winter Moths

by Jane Mingari

2. Noctuids are some amazing moths.
3. Hey, if these moths are sound-activated, maybe they're bat food and have evolved to avoid bats.
4. Ah-hah, another insect to add to the little list of those present and active in winter here.

I found out that Noctuids, also known as Owlet Moths, are the largest family of Lepidoptera, with 2,700 to 2,900 species in North America alone. "Noctuid" comes from Latin meaning "night owl."

We know them well in the larval form—they're the cutworms, armyworms, and semi-loopers. Insect guides consistently describe them in such hostile terms as "serious pests!" and "destructive!"

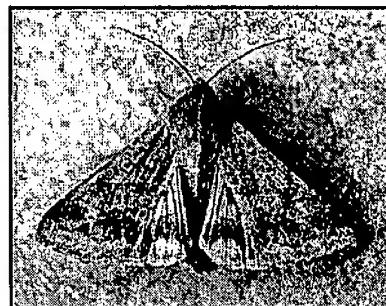
Most Noctuids are furry with camouflage coloring of some kind—shades of rust, brown, or gray with squiggles and dots. They can be fabulously well-hidden in plain sight on the forest floor. This color scheme suits an insect group near the bottom of a food pyramid: It's one of their defenses against sharp-eyed predators.

But what about that Corn Earworm Moth, dining on *Liatris* nectar in blazing broad daylight? The moth was whiteish and probably better hidden by high-contrast sunshine than it would have been in darkness, where white would catch an eye. Daylight moth predators are usually birds, and most birds hunt by sight, so that seems to make sense. But a white moth with a hearing response?

It turns out that Once Upon a Time...Noctuids were hunted by echolocating bats. They still are. Natural selection favored the moths that could hear and avoid the bats, and Noctuids now have ears in their thorax. But hearing hungry bats didn't always save the moths. Those that developed other,

secondary resorts managed to survive better. Some Noctuids shifted to daylight activity to avoid nocturnal predation. Since it didn't cost them much to retain the ability to hear, we still find it

in the white Corn Earworm Moth. They still differentiate between bat-like sounds, whether they need to or not. One study, testing noctuid responses to bat-like sounds, found that if the noise is distant, the moths "often turn and fly away, whereas those close to the source show zigzag and looping flight, power dives, or passive falls" (Miller & Surlykke p. 5/18 online). When I snapped the camera shutter that August day, I didn't notice which way the moth went



Corn Earworm Moth

(*Helicoverpa zea*)

Photo: Janice Stiefel. 9/5/99. Door Co.
Moth coloration is variable.

when it disappeared from the flower. I couldn't find it in the air. It makes me feel pretty dumb thinking about it now. The moth probably dove to the ground beside my knees.

Winter moths intrigued me for about the same reason—evolution into the unexpected. My first clue that something strange was going on was when I located the winter moths in an insect guide. Instead of something like "May thru September," the book listed seasonal activity as "September thru May" for northern states.

Yes, while other Lepidoptera are emerging from a pupae in Wisconsin, winter moths are laying eggs. Their larvae have hatched and are eating while other moths are mating and laying eggs. They're pupating in summer, while other

Please see WINTER MOTHS, Page 7

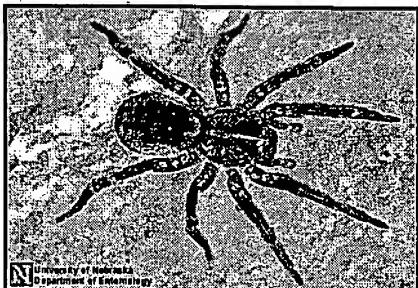
Female Wolf Spider (*Hogna helluo*)

Photo: Jim Kalisch
University of Nebraska
Dept. of Entomology

As I approached the side entrance of my son's school located in Delaware County, Ohio in May of 2001, I could hear the kids screaming. I rushed in and quickly found out what all the commotion was about. A large, female Wolf Spider (*Hogna helluo*) was on the floor.

I thanked the kids for not stepping on her and said I would put her outside. I told them that it was not a good idea to pick up the spider, rather I was going to use a stick. I had been successful with this method many times before and didn't think anything of it. I put one end of the stick near her and she got on. As I was stepping outside to fling her onto the flower bed that was just outside the door, she ran up the length of the stick at a speed I have never seen this species of spider move, reared up, and sunk her fangs into the back of my middle finger. This all happened in a matter of seconds.

The kids were very concerned

"Can you imagine Halloween without a pumpkin, a tumbling mountain river without salmon, or a sunrise without a chorus of bird songs? None of these would exist without invertebrates. These diverse and wonderful creatures—butterflies, beetles, bees, ants, dragonflies, spiders, snails, worms, lobsters, and starfish, to name but a few—are at the heart of a healthy environment, vital to life as we know it. They build the stunning coral reefs of our oceans, give color to sparkling fields of springtime wildflowers, and serve as food for countless animals."

"Simply put, a world without invertebrates would be impoverished, and ecosystems would collapse. Yet despite their staggering importance, environmental policy often overlooks these integral building blocks of our ecological well-being..."

—The Xerces Society

An international non-profit organization dedicated to protecting biological diversity through the conservation of invertebrates.
Visit them at their website: www.xerces.org
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THE GREAT SPIDER BITE

by Valerie Passoa

because they knew she had bitten me. I did the best acting job imaginable, trying not to yell out, because the pain was excruciating. I have a high tolerance for pain, but this was really terrible. I stood there and as calmly as possible said, "This is why you should never pick up a spider". Ha!

When I flung the spider onto the flower bed, she remained motionless because of the cryptic nature of her coloring against the mulch. I went to the car and got a cup with a fitted lid and scooped her into it. The spider's leg span was 5 cm and total body length was 2 cm. I released her in my yard later that day.

Two, tiny puncture marks were visible on my finger and swelling occurred for about two hours. If the swelling had progressed or if I had trouble breathing, I would have sought medical attention. The swelling subsided and I was fine. Oddly enough, I have not developed a fear of spiders. On the contrary, after that experience, I now have an even healthier respect for spiders and figure what worse could happen, unless I am ever bitten again by *Hogna helluo*! ☺

Valerie resides in Powell, Ohio. She is a member of WES, Vice-President of The Ohio Lepidopterists, and a wildlife biologist.

Wisconsin Entomological Society Dues for 2003

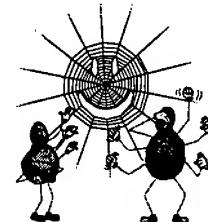
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End-of-Summer Poem

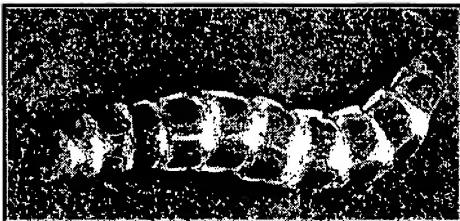
by Rowena Bastin Bennett

The little songs of summer
Are all gone today.
The little insect instruments
Are all packed away:
The bumblebee's snare drum,
The grasshopper's guitar,
The katydid's castanets—
I wonder where they are.
The bullfrog's banjo,
The cricket's violin,
The dragonfly's cello
Have ceased their merry din.
Oh, where is the orchestra,
From harpist down to
drummer?
They've all disappeared
With the passing of the summer.

From Favorite Poems
by Helen Ferris
Used with permission

Glowworms and Fireflies

Text and Photos by Janice Stiefel



Adult Female Glowworm
(*Phengodes* spp.) Family: Phengodidae
Photo: 7/22/92, Sheboygan Co.



Adult Male Glowworm

GLOWWORM

This strange caterpillar-like insect has taken ten years to identify. I received a phone call one morning in 1992 from Fred and Shirley Horneck of Elkhart Lake. They had found a caterpillar that actually glowed in the dark and wanted to know if I knew what it was. Having no familiarity with a creature like that, I had to see it. So I packed myself and camera into the car and drove over to observe for myself. At the time, the only ID we could come up with was the larva of a Firefly because it glowed in the dark. The slide has been in my files ever since.

This past spring my husband found an Armadillo-like creature crawling on the floor of our power shed. Not having a clue as to its identity, I sent the specimen to Steve Passoa, National Lepidoptera Specialist with the USDA in Columbus, Ohio. When he identified the insect as the larva of the Firefly, something clicked in my mind—the “supposed” Firefly larva we had tentatively identified ten years earlier in Elkhart Lake. Something didn’t make sense. If this Armadillo-like creature was the larva of the Firefly, what was the caterpillar that glowed in the dark?

Sending the slide of the caterpillar to Steve Passoa revealed that it was really the female adult of the Glowworm Beetle (*Phengodes* spp.) and not a caterpillar. The Glowworm Beetle belongs to the Order Coleoptera (beetles), while caterpillars belong to the Order Lepidoptera (butterflies and moths).

With that ten-year-old mystery solved, I did a little digging into the life cycle of the Glowworm. There are 25 species found in the U.S. and Canada.

Luminous caterpillar-like females are found in leaf litter, under logs, and beneath bark. The adult male has wings; distinctive, long, 12-segmented, feathered antennae; and long, slender, prominent mandibles.

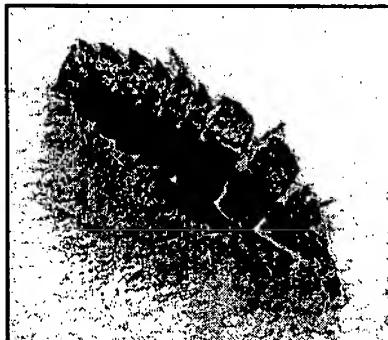
As you can see from the sketch, it doesn't look anything like the female. Even though the books say the

males come to outside lights at night, I have never seen this form of the Glowworm.

The larva of this species feeds on soft-bodied insects and other small organisms.

The descriptive Genus Name, *Phengodes*, is from the Greek word, phengo, meaning “to make bright, to shine,” obviously referring to the adult female.

FIREFLY or LIGHTNINGBUG



Firefly Larva (*Photuris* spp.)
Family: Lampyridae
Photo: 4/15/02, Door Co.

This is the Armadillo-like creature that was a mystery until Steve Passoa made a positive ID.

The night-flying adults possess bioluminescence and are often seen over meadows, along streams and lawns flashing their lights. Actually, they are not a fly, but a soft bodied beetle. The bioluminescent organ is in their abdomen, with each individual

species displaying a different pattern. Most of their flashing plays a role in courtship and is the means by which the sexes recognize each other. Luminescent abdominal segments of the adults are ivory or glazed in appearance when not glowing. The adult eats nothing, while the larva feeds on insect larvae, snails and slugs. The Firefly is named after a fly fabled for rising from the fire.

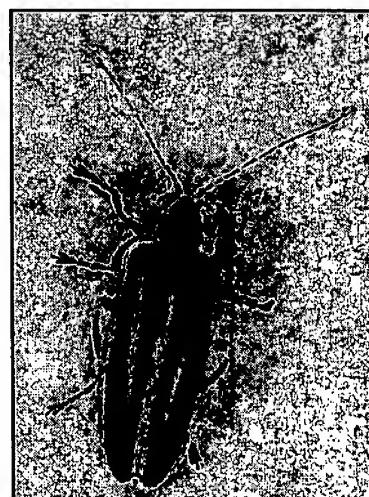
One special summer night, toward the end of June, thousands of these spectacular beetles were frolicking in our meadow, resembling the remnants of a fireworks display or falling stars dropping down from the sky. It was an awesome sight to behold—one of those once-in-a-lifetime experiences. Perhaps a similar encounter inspired this verse:

Fireflies

Little lamps of the dusk,
You fly low and gold
When the summer evening
Starts to unfold.
So that all the insects,
Now, before you pass,
Will have light to see by,
Undressing in the grass.

But when the night has flowered,
Little lamps agleam,
You fly over treetops
Following a dream.
Men wonder from their windows
That a firefly goes so far—
They do not know your longing
To be a shooting star.

—Carolyn Hall
Used with permission



Adult Firefly (*Photuris* spp.)
Photo: 6/21/02, Door Co., WI

The Pest You Should Learn to Love

by Kristin Fischer

In my days growing up in central Wisconsin, during my trip to the rain forests of Belize and Guatemala, in my summer in south-central Alaska, and leading tours through the Ridges Sanctuary in Door County one insect has followed me wherever I go. They'll hover and hum around your ankles on a warm summer night. They swoop down from the lush green canopy of the towering rain forest. They explode from the alders as you push your way up the mountainside for a little afternoon stroll. But, no matter where I am, these little insects share a very similar reputation: bloodsuckers that should be killed in the largest numbers possible and as fast as possible. Mosquitoes really started to interest me when I realized that *everyone* hated them and I wondered how an insect that everyone despises can still be alive and thriving. They must have some purpose in the bigger picture of things. There are over 2000 different species of mosquitoes that live from the tropic to the arctic. But honestly, what good are they?

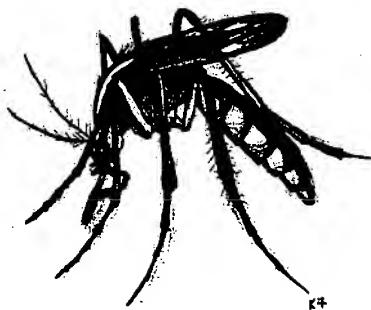
In my search for Mosquito nirvana I learned many interesting things about the 'lil bloodsuckers. First of all, mosquitoes really are not bloodsuckers at all—their main food source is nectar. By eating nectar they become pollinators and that is a good thing ecologically and economically for plants and food crops. Only the female mosquitoes drink blood and they only drink enough to get the nourishment they need to lay eggs: 5 millionth of a liter. Mosquitoes are actually a very specialized insect. As a member of the fly family they have two wings that enable them to fly fast and hover like a helicopter. Their mouth parts are fine-tuned drilling machines that can go through any type of skin (even reptile scales) and they tear up the capillaries for easy drinking. Mosquitoes secrete an anticoagulant

saliva that keeps your blood flowing when they are partaking in a little meal. Most of us are allergic to mosquito saliva and that's what creates the itchy red bump.

The small offering of blood we give every now and then goes to support a plethora of creatures. Bats, other mammals, fish, birds, reptiles, amphibians, and even other insects, like dragonflies, all eat mosquitoes. You can only begin to imagine the hysteria that would be created in the food web if you removed this one key prey species! Many activities that involve getting eaten by mosquitoes would no longer exist if mosquitoes were eliminated. Bird watching, fishing, and gardening are only a few!

Finally, mosquitoes are useful to our economy...not only for the many ecological benefits, but look at the support we give the mosquito control industry. Look at all the jobs that would be lost if we no longer needed repellent sprays, creams, netting suits, zapping lights, candles, and everything else created to remove skeeters. You can see that mosquitoes play a huge role in our everyday lives.

The role that mosquitoes play is not always a good role. Mosquitoes are often called the world's most deadly creature because diseases carried by mosquitoes sicken about 700 million people every year. With the rapid spread of the West Nile Virus across the United States, mosquito-borne illnesses are hitting a little closer to home. In 27 states there have been over 500 cases in humans and 28



Sketch by Kristin Fischer

deaths. This threat makes killing mosquitoes an easy decision... but is it? It seems like spraying should eliminate much of

the problem but in all actuality it creates a bigger one. Just like virus resistance to antibiotics, mosquitoes can rapidly develop resistance to sprays created to kill them. Rachel Carson provides great insight to this:

"The reason I say they [sprays] are self-defeating is that insect populations very quickly develop resistance to chemical sprays. This nullifies all we are trying to accomplish by spraying. In the end we find that we have gone to considerable expense and trouble for nothing. We have killed off or endangered fish, birds, and other wildlife, contaminated vegetables and fruits, damaged shrubbery and flowers, and introduced poisonous chemicals into soil and water supplies. After all this, we find the mosquito has the last laugh, for while we have been progressively poisoning our own environment, the mosquito has been breeding a superior race composed of individuals that are immune to chemical attack."

When eliminating an important species like mosquitoes you are also ignoring the fact that they play an absolutely necessary role in the health of our animals, plants, entire ecosystems, and our own ecosystem.

I am not immune to mosquitoes, and I was happy to know there are safe, natural ways to control them around our homes. One way is "cleaning up the trash" or removing mosquito habitat. Three-quarters of the mosquito life cycle is spent in water. Mosquitoes LOVE still, stagnant water and anything that holds more than a tablespoon of water is a potential breeding ground.

Please see MOSQUITO, Page 7



MOSQUITO, from Page 3

So keep your eyes open for places collecting water and remove them or create drains so rainwater cannot pool up. You can also clean out rain gutters and bird baths often to remove that still water. Mosquitoes are attracted to us by the heat, moisture, carbon dioxide, and over 300 mosquito-attracting chemicals we emit. Repellents can block the receptors they use to find us but as long as we're breathing, they know we're there! Although I have been a victim of mosquitoes many times, I know that since learning more, I can definitely stand a little blood offering every now and then to an insect that truly has a presence much bigger than a couple of annoying, itchy, red bumps. ☺

Kristin was the summer naturalist at The Ridges Sanctuary in Bailey's Harbor this past summer. She is currently a student at UW-Stevens Point majoring in environmental education and interpretation, with a minor in environmental law.

WINTER MOTHS, from Page 3

moth larvae are eating (and being eaten by birds). And the winter moths are emerging as adults while many other moth larvae are looking for a place to pupate. During winter, it seems the owlet moths are buried by dead leaves and snow, but a warm day or a thaw brings them out.

This schedule has its benefits if you're bat food. In Wisconsin, most bats are summer predators. Big brown bats, however, are almost as likely as the winter moths to be cruising the skies on a warm winter evening, so the moths haven't completely managed to escape that predation.

The Miller & Surlykke study reports that winter moths can hear, too. I didn't experience the sound activation of the winter moths back in March—most of them were glued by the wings to dry sap on the pails. I can tell you this much; those moths are just about indestructible. I callously did the insect collection routine—killing jar, spreading board. The moth walked off my spreading board three times and then I gave up. I felt guilty. That is

one tough little moth.

So how does a winter moth (a cold-blooded insect) get away with this chilly lifestyle? And just how "chilly" are we talking?

Bernd Heinrich went further than I did: he put some owl moths in water and froze it solid. As soon as the ice was thawed, the moths straightened themselves out and flew away. Heinrich found that the moths only got away with this because his freezer wasn't colder than 32°F, and because the duration of freeze was not perpetual. If it had been, those would have been dead moths. Unlike many insects that are active in cold temperatures, owl moths do not contain glycerol, which would keep their blood from freezing. Instead, they have a couple of features and strategies that conserve their heat and energy.

Owl moths have densely furry bodies, which minimizes their heat loss. The tympanic air sacs, that are also their ears, provide some insulation from cold temperatures. And they have a heat-exchanging circulatory system. All this keeps their thorax warm enough for flight on a 32°F winter day. When the air temperature is colder, the moths rest beneath dead leaves. Their metabolic rate slows down, using very little energy, while the leaves insulate them from the cold. ☺

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Editor's Note: Jane Mingari found and translated a Spanish-language edition of Zim & Cottam's 1956 *Insects (Golden Guide)*. It has a page devoted to Noctuids, which is not in the English edition. It stated: "Todos ellos son estrictamente nocturnos y les atrae vivamente la luz..." All (noctuids) are strictly nocturnal and are strongly attracted to lights. Not true, both Jane and I have observed several day-flying Noctuids.

"En su mayoria presentan colores parduscos bastante apagados ..., que son mimeticas de las cortezas de los arboles sobre los que reposan." The majority are more or less a dull gray-brown in color, which mimics the bark of the trees on which they rest. Not really true. One example: Catocala (Underwings) have beautiful, bright coloration on their hindwings, while many others have lovely colors and designs on their forewings.

A Dispatch From the Past...

*Evergreen City Times
(Sheboygan, Wisconsin)
August 28, 1869*

"The Tomato Worm: People at this season should look out for the large worm which infests the tomato vine. Its sting is deadly poison. It is of a green color, two or three inches long, and as large as a man's finger. At Red Creek, Wayne County, Indiana a few days ago, a servant girl, while gathering tomatoes, received a puncture from one of these worms, which created a sensation similar to that of a bee sting. In a short time, the poison penetrated to every part of her system and she was thrown into spasms which ended in death."

*Researched by Mark H. Knipping,
Curator of Research & Collections,
Wade House, Greenbush, Wisconsin.*



Tomato Hornworm (black form)
(Manduca quinquemaculata)

Photo: 8/16/02, Janice Stiebel

In modern times, this species has not been reported as being harmful. Actually, the horn is no different than any of the larvae of the Sphingidae family. No one will ever know what really happened in 1869.

"We need these unseen invertebrate armies. Flies and moths are irreplaceable pollinators. Caterpillars are songbird fodder. Worms, not farmers, are the great plowmen of the earth, and if they ceased to till and fertilize the soil, or if insects no longer inhabited our fields and forests, we would soon starve. The bodies of invertebrates create the coral reefs and give rise to much of the life of the oceans. We are already beginning to see what might happen without them."

—Richard Conniff
Spineless Wonders: Strange Tales from the Invertebrate World
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